Evaluations on Matching Quality for 8 different Algorithms over various Inlier Ratios

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Abstract. In this document, we present additional results on the mean accuracy, precision, recall, and fall-out over various inlier ratios. The evaluations are performed on various datasets for SIFT features as well as FAST keypoints & FREAK descriptors.
Fig. 1. Varying inlier ratio compared to mean (a) accuracy, (b) precision, (c) recall, and (d) fall-out using SIFT features in addition to mean (e) accuracy, (f) precision, (g) recall, and (h) fall-out using FAST keypoints & FREAK descriptors for the entire KITTI disparity dataset from Menze and Geiger [1]. For comparison, the following algorithms were used: Guided Matching based on Statistical Optical Flow (GM), hierarchical clustering tree (HC), linear matching (LI) from the FLANN library, Sparse-VFC (VF) in combination with the hierarchical clustering tree, CasHash (CH), priority search k-means tree (HK), and the randomized KD-tree (RA). On the results of all algorithms, a ratio test was performed.
Fig. 2. Varying inlier ratio compared to mean (a) accuracy, (b) precision, (c) recall, and (d) fall-out using SIFT features in addition to mean (e) accuracy, (f) precision, (g) recall, and (h) fall-out using FAST keypoints & FREAK descriptors for the entire KITTI flow dataset from Menze and Geiger [1]. For comparison, the following algorithms were used: Guided Matching based on Statistical Optical Flow (GM), hierarchical clustering tree (HC), linear matching (LI) from the FLANN library, Locality Sensitive Hashing (LSH), SparseVFC (VF) in combination with the hierarchical clustering tree, CasHash (CH), priority search k-means tree (HK), and the randomized KD-tree (RA). On the results of all algorithms, a ratio test was performed.
Fig. 3. Varying inlier ratio compared to mean (a) accuracy, (b) precision, (c) recall, and (d) fall-out using SIFT features in addition to mean (e) accuracy, (f) precision, (g) recall, and (h) fall-out using FAST keypoints & FREAK descriptors for the entire “bark” dataset from Mikolajczyk et al. [2, 3]. For comparison, the following algorithms were used: Guided Matching based on Statistical Optical Flow (GM), hierarchical clustering tree (HC), linear matching (LI) from the FLANN library, Locality Sensitive Hashing (LSH), SparseVFC (VF) in combination with the hierarchical clustering tree, CasHash (CH), priority search k-means tree (HK), and the randomized KD-tree (RA). On the results of all algorithms, a ratio test was performed.
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Fig. 4. Varying inlier ratio compared to mean (a) accuracy, (b) precision, (c) recall, and (d) fall-out using SIFT features in addition to mean (e) accuracy, (f) precision, (g) recall, and (h) fall-out using FAST keypoints & FREAK descriptors for the entire “boat” dataset from Mikolajczyk et al. [2, 3]. For comparison, the following algorithms were used: Guided Matching based on Statistical Optical Flow (GM), hierarchical clustering tree (HC), linear matching (LI) from the FLANN library, Locality Sensitive Hashing (LSH), SparseVFC (VF) in combination with the hierarchical clustering tree, CasHash (CH), priority search k-means tree (HK), and the randomized KD-tree (RA). On the results of all algorithms, a ratio test was performed.
Fig. 5. Varying inlier ratio compared to mean (a) accuracy, (b) precision, (c) recall, and (d) fall-out using SIFT features in addition to mean (e) accuracy, (f) precision, (g) recall, and (h) fall-out using FAST keypoints & FREAK descriptors for the entire “graffity” dataset from Mikolajczyk et al. [2, 3]. For comparison, the following algorithms were used: Guided Matching based on Statistical Optical Flow (GM), hierarchical clustering tree (HC), linear matching (LI) from the FLANN library, Locality Sensitive Hashing (LSH), SparseVFC (VF) in combination with the hierarchical clustering tree, CasHash (CH), priority search k-means tree (HK), and the randomized KD-tree (RA). On the results of all algorithms, a ratio test was performed.
Fig. 6. Varying inlier ratio compared to mean (a) accuracy, (b) precision, (c) recall, and (d) fall-out using SIFT features in addition to mean (e) accuracy, (f) precision, (g) recall, and (h) fall-out using FAST keypoints & FREAK descriptors for the entire “wall” dataset from Mikolajczyk et al. [2, 3]. For comparison, the following algorithms were used: Guided Matching based on Statistical Optical Flow (GM), hierarchical clustering tree (HC), linear matching (LI) from the FLANN library, Locality Sensitive Hashing (LSH), SparseVFC (VF) in combination with the hierarchical clustering tree, CasHash (CH), priority search k-means tree (HK), and the randomized KD-tree (RA). On the results of all algorithms, a ratio test was performed.
References